From China Shock to Global Shock – Economic Spillovers and Spillbacks During the Coronavirus Pandemic

Bloomberg LP
Economist Chang Shu, Maeva Cousin and Jamie Rush

Executive Summary

The coronavirus pandemic has brought economic hardship to China unseen since the economic reform in the 1970s. The pandemic led to a sudden stop of the Chinese economy in the first two months of 2020 and then in other parts of the world from March.

The evolving crisis gave rise to three stages of interaction between China and the rest of the world – predominantly one-way negative spillovers to the global economy during China's lockdown, predominantly one-way negative spillbacks to China during the global lockdown, and a return to normal two-way feedbacks as the world starts to emerge from lockdowns.

- In Stage 1, China's negative spillovers to other economies were strong both through demand and supply channels. Countries in the Asian supply chain and commodity exporters were most affected. Western economies were less impacted by comparison.
- In Stage 2, the negative spillbacks to China predominantly have come from the demand side. The projected contractions in U.S. and Germany are set to give the biggest hit to China's exports.
- The macroeconomic impact from supply chain disruptions is likely to be much more modest, but it will add to the demand shock and weigh on manufacturing activities. A high reliance on imported inputs makes certain high-tech sectors in China particularly vulnerable.

- As countries start exiting from lockdowns, Stage 3 begins, with a two-way feedback between China and the global economy prevailing in normal economic conditions in today's integrated world. Two-way feedback can be positive or negative.

The extraordinary challenges brought by the pandemic require bold actions in crisis fighting and strategic realignment of the economic structure over the longer term. The following areas are of particular importance.

- In the short term, fiscal policies need to be forceful, with accompanying monetary and other policies, in order to prevent a longer downturn, and to avoid international spillovers and spillbacks enforcing negative feedback loops.

- Policy support needs to be balanced poverty relief and growth support, between large, state firms and small, private firms, and between investment and consumption. Public investment stays an important engine to support the economy, as in previous downturns. But more policies are needed than before to support the most vulnerable social groups and firms.

- Over the longer term, there should be a strategic re-think and re-organization of supply chains. A retreat from global supply chains is not feasible. A riskier and more fragmented global system will inevitably trigger efforts to ensure security of access to essential inputs.

Contents

Introduction

The coronavirus pandemic has brought the biggest hit to the Chinese economy since the country started economic reforms in the late 1970s, and the rest of the world felt the shockwaves. But as the virus spread and lockdowns shuttered vast swathes of the world economy, the spillbacks from the rest of the world have extended China's pain. This paper examines the channels of interaction at difference stages of the pandemic, and considers the policy implications.

This paper is organized as follows. Section 1 lays out the three key stages of interaction between China and the rest of the world in the pandemic. Section 2 assesses the demand and supply channels through which China sent one-way negative shocks to the rest of the world during its lockdown early in the year. Section 3 addresses the spillbacks to China since March. Encouraging signs that the pandemic is coming under control and countries exiting lockdowns will bring a return of the two-way feedback between China and other economies. That is the topic of Section 4. The final section makes policy recommendations in a number of key areas.

Section 1. Stages of Pandemic and Interactions between China and Rest of World

The coronavirus has spread rapidly across the world, with around 6.8 million confirmed cases of Covid-19 and 400,000 deaths by early June since the outbreak began Wuhan, China in late 2019.

There have been two major waves in the pandemic so far.

The first was in China. After the outbreak in Wuhan, the virus swept across Hubei province. To contain the disease, China locked down most of the province in late January and introduced strict social distancing measures across the rest of the country -- bringing the economy to an almost complete halt for more than two weeks. The process of jump-starting activity did not start in earnest until the second half of February.

The next wave was global. By mid-March, the virus was making its way across several continents, hitting major economies including, Italy, Spain, France, the U.K and the U.S. Other parts of Asia also experienced outbreaks, prompting governments to impose lockdowns and adopt social distancing measures that brought their economies to sudden stops.

In April, the pandemic started to show signs of a peak. Major countries started to consider relaxing restrictions on activity.

1.1 Stages of Interactions

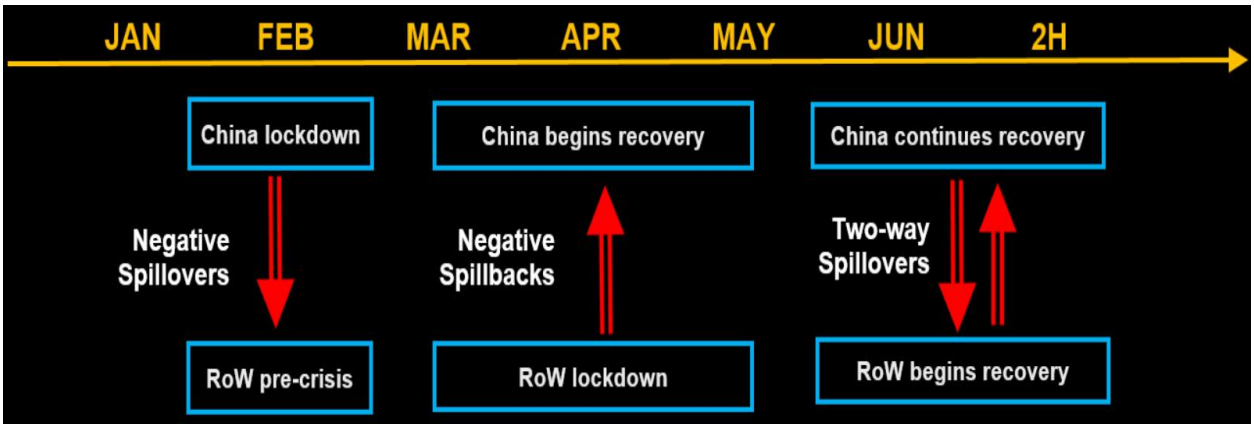
The waves of outbreaks gave rise to three key stages of interactions between China and the rest of the world.

Stage 1. Between Mid-January and Mid-February: With China's economy shut down, the shock emanated from China to the rest of the world. The interaction was one way at this stage: China sent negative spillovers to other economies.

Stage 2. Between Mid-March and May: China embarked on a post-pandemic recovery. At this stage, the one-way interaction largely reversed. China was on the receiving end of the negative spillbacks, with widespread lockdowns among major trading partners hampering progress. And with factories closed, other economies would not have been in a position to benefit from the re-opening of China's economy.

Stage 3. From May: Recoveries will begin to take hold across the world as countries re-open their economies. At the same time, China endeavours to get its economy back up to speed. The interactions will become to two way – positive and negative developments in China will impact the rest of the world, and vice versa.

Chart. Three Stages of Interactions Between China and the Rest of the World



Source: Bloomberg Economics

Section 2. China's Global Spillovers

China's lockdown – which caused acute domestic supply and demand shocks -- had a devastating impact on the economy at the beginning of the year. With a deep contraction in the first two months and some recovery in March, the economy contracted 6.8% year on year in the first quarter – the worst performance in four decades.

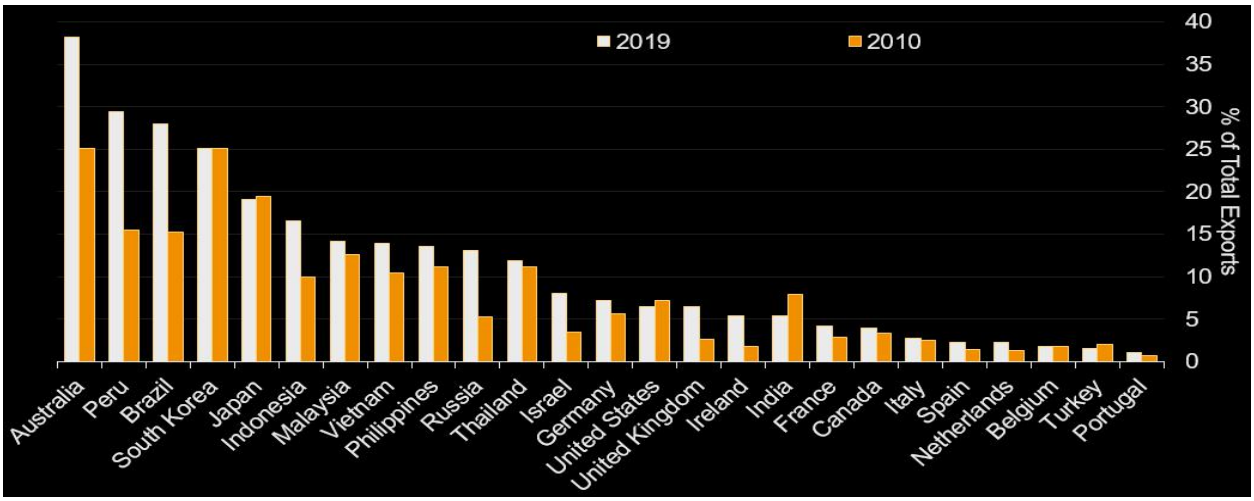
The slump had global repercussions. Back in 2003 when SARS broke out, China accounted for just 4% of global GDP. Fast forward to 2020, and its share has increased to 17%. China's much increased weight and closer integration into the world economy meant that China's downturn this time round had much larger spillovers.

2.1 Demand Shock to Other Economies

China doubled its share in global imports to 10% between 2003 and 2019. The economy's dramatic slowdown meant a considerable decline in external demand for other countries' imports. This was particularly hard for export-oriented economies.

- For many Asian economies, exports to China accounted for more than 10% of the total in 2019. The share was as high as 19% and 25% for Japan and South Korea, respectively.
- Commodity exporters were also highly exposed, and much more so than compared to a decade ago. Exports to China amounted to close to 30% of Brazil's total exports, and the share was almost 40% for Australia.
- Advanced economies' exposure to China's demand was lower. Germany, the U.K. and the U.S. had highest shares of exports to China at around 7%.

Chart. China's Share in Countries' Total Exports



Source: Bloomberg Economics

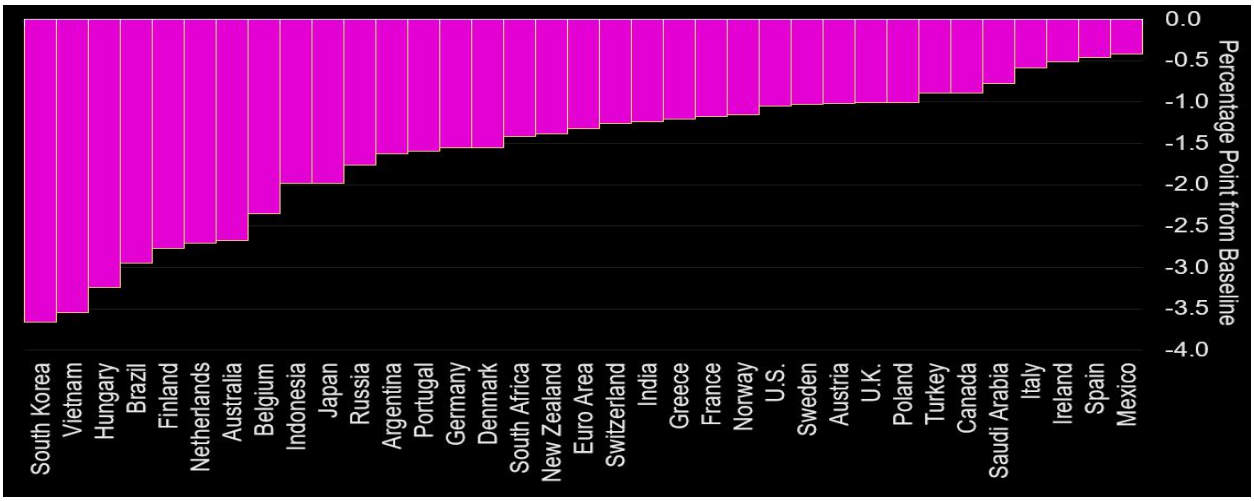
To capture the impact of the China shock to the rest of the world during the lockdown, we use NiGEM – a global macroeconomic model – to make simulations. The shock is taken as the difference of the projection for China's 1Q growth before the pandemic -- our forecast was 5.9% year-on-year growth -- and the actual outturn, a 6.8% contraction.

- China's Asian neighbours are deeply embedded in regional supply chains, and export to China's consumers. South Korea and Vietnam were the most affected, with their 1Q year-on-year growth estimated to be around 3.5 percentage points lower than the case without the China shock. The blow to Japan was estimated at -2 ppts.

- Commodity exporters -- hard commodities for China's industry and soft commodities for consumers -- also took a hit. Australia and Brazil may have had 3 ppts trimmed from 1Q growth due to the weakness in China, while South Africa saw a more modest hit.

- With smaller export exposure, Western economies faced a smaller hit. Germany was the most affected, with a growth hit of 1.6 ppts. The U.S. and U.K. might have seen a 1 ppt drag.

Chart. Impact of China's Lockdown on Other Economies' GDP growth



Source: Bloomberg Economics

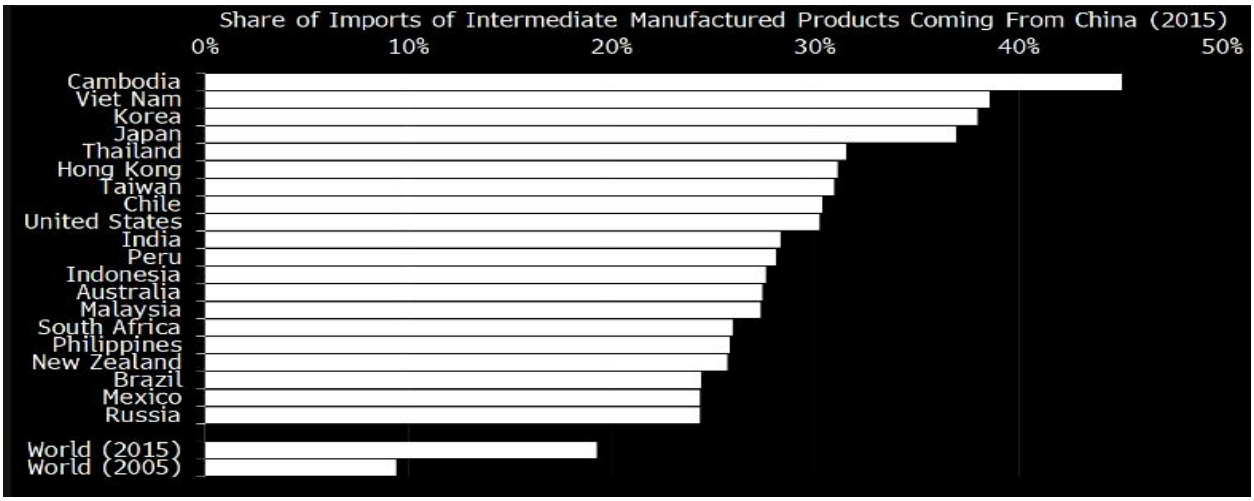
2.2 Supply Shock to Other Economies

Just as weak Chinese demand hurt the rest of the world, and so did the closure of China's factories. China is the world's largest exporter of intermediate manufactured products -- components destined for use in supply chains across the world. Using detailed Organisation for Economic Co-operation and Development trade data, we assess which economies are most vulnerable.

- About 20% of global imports of intermediate manufactured goods come from Chinese factories. Global reliance on these inputs for production has doubled since 2005 as China expanded and supply chains went global.
- For countries in the Asian supply chain, the exposure is bigger -- about 40% of all imports of intermediate manufactured products consumed in Cambodia, Vietnam, South Korea and Japan came from China in 2015.

- American factories are also reliant on supplies from China. About 30% of all imported U.S. manufacturing inputs came from China in 2015, and the trade war appears to have only had a small effect in weaning manufacturers off Chinese products.
- Risks to Europe appear to be more limited, with only 10% of intermediate goods imports coming from China. But here, as well, there are pockets of risk, with almost a third of all European imports of intermediate electronics and textile sourced in China.

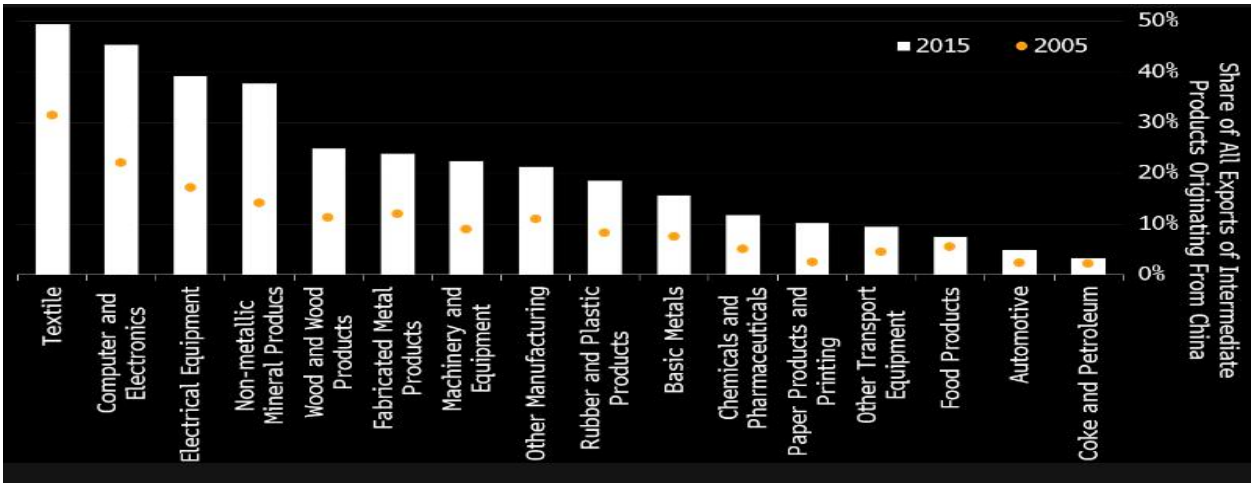
Chart. Exposure to China Supply by Country



Source: OECD, Bloomberg Economics

- Finding alternative sources will be particularly hard for products in which China is a dominant supplier globally. More than a third of imports of textiles, computer and electronics, electrical equipment and non-metallic mineral products used in the production process globally came from China in 2015. Chinese dominance has increased sharply across all sectors since 2005.

Chart. China's Share in Intermediate Inputs

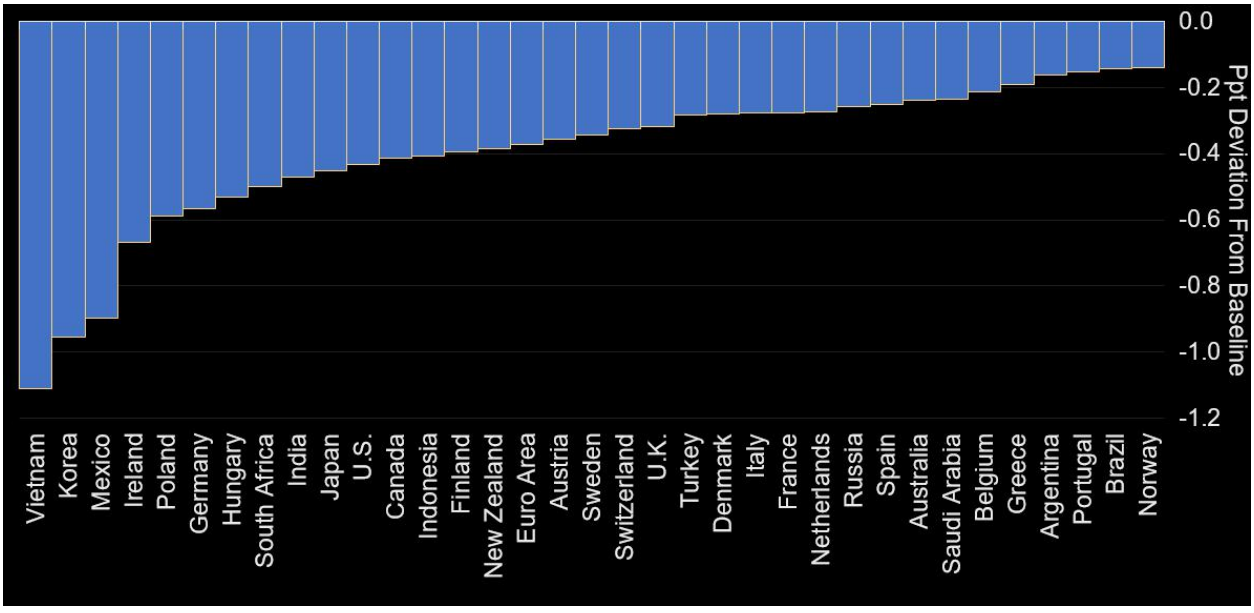


Source: OECD, Bloomberg Economics

These connections mean that China's lockdown sent a supply shock rippling along global value chains. In addition to our NiGEM-analysis of spillovers from weaker Chinese demand, our supply chain analysis suggests some economies may have seen meaningful disruptions -- typically those with large manufacturing sectors and concentrated exposures to inputs from China.

Economies with big industrial sectors and close ties to China faced the greatest risk of disruption. Vietnam in particular looked vulnerable, given its integration in Asian supply chains. Mexico carried an outsize risk as well -- its electronics and car manufacturers rely heavily on electrical components imported from China. The shock to the U.S. economy looks smaller. Some factories might have felt a big pinch from exposure to Chinese suppliers, but the manufacturing sector is small enough that the overall economic impact should have been limited.

Impact on GDP growth from Supply Shock



Source: Bloomberg Economics

Section 3. Global Spillbacks to China

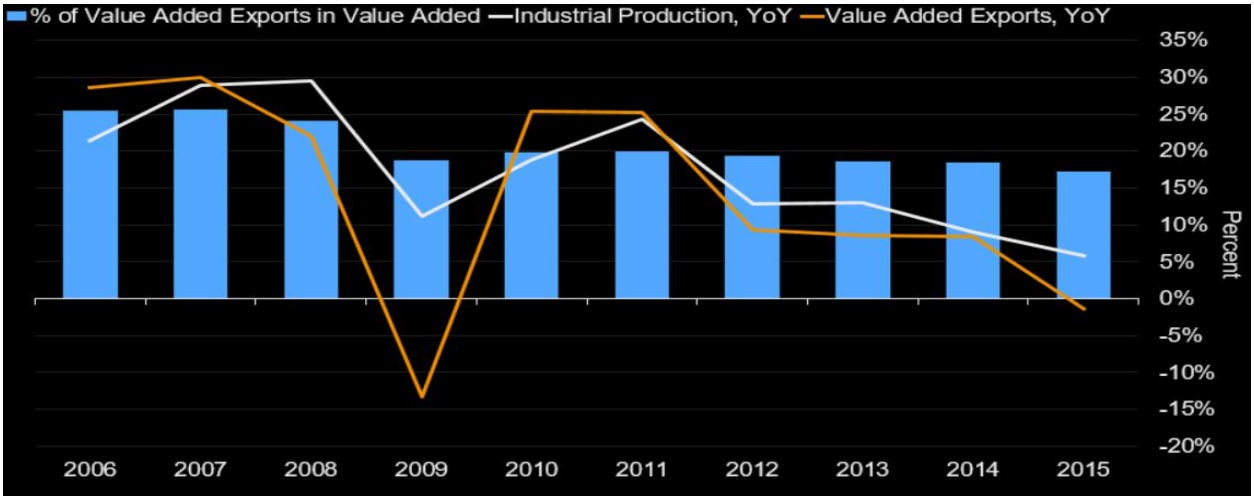
As China started to emerge from the virus hit, the lockdowns across the world since March have threatened to hold back its recovery. This has been mostly through the demand channel, with supply channels compounding the impact on the manufacturing sector.

3.1 Demand Shock to China

China's economy has developed stronger domestic growth engines over the years, but exports remain a significant driver.

- According to the OECD, the share of exports in China's value added output fell to 17% in 2015 (the latest year such data are available), from around 25% a decade ago.
- Measured on a gross value basis, exports of goods accounted for 17.6% of GDP in 2019, down from 21.4% of GDP in 2015 and 32.8% of GDP in 2005, according to China's customs data.

Chart. China's Share of Exports in Total Output

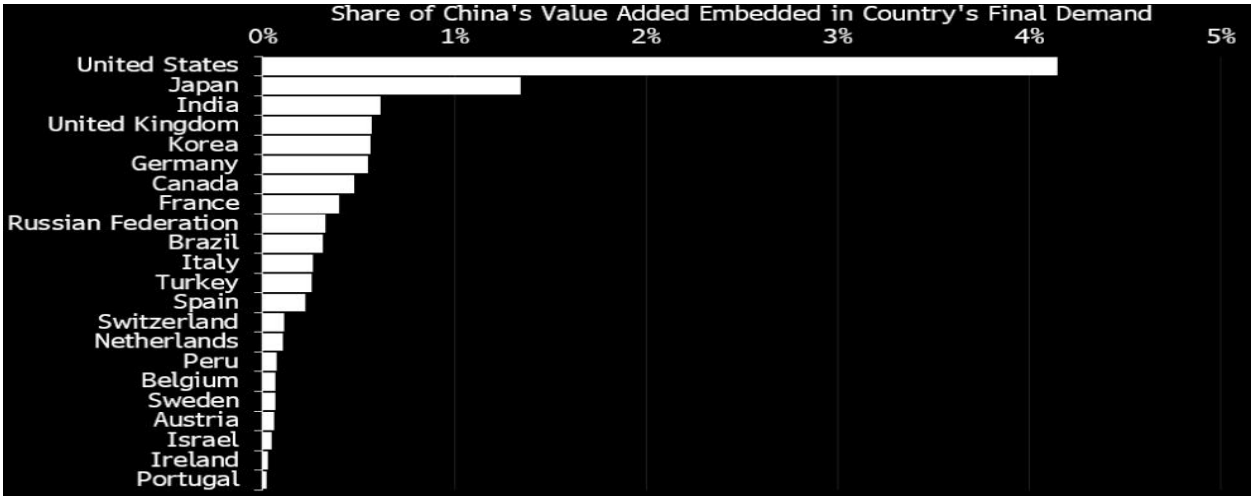


Source: OECD, Bloomberg Economics

Even so, external demand remains important. The 2015 OECD data show 10.6% of Chinese production was embedded in final demand from the 22 countries currently most affected by the pandemic.

- China is most exposed to the U.S. by a wide margin. The U.S. accounted for 16.8% of China's exports in 2019, and more than 4% of Chinese value added production was exposed to U.S. final demand in 2015 (though the trade war has likely reduced this exposure).
- Western European countries accounted for 12.7% of China's exports. In value added terms, they consumed about 2.5% of China's output in 2015.
- China's intra-regional ties are stronger, with 13.2% of exports going to Japan, South Korea and India alone, though a sizable share of these exports might have been used in output to be re-exported to other countries. Final demand of these economies accounted for 2.5% of China's output.

Chart. Share of Markets in China's Total Exports



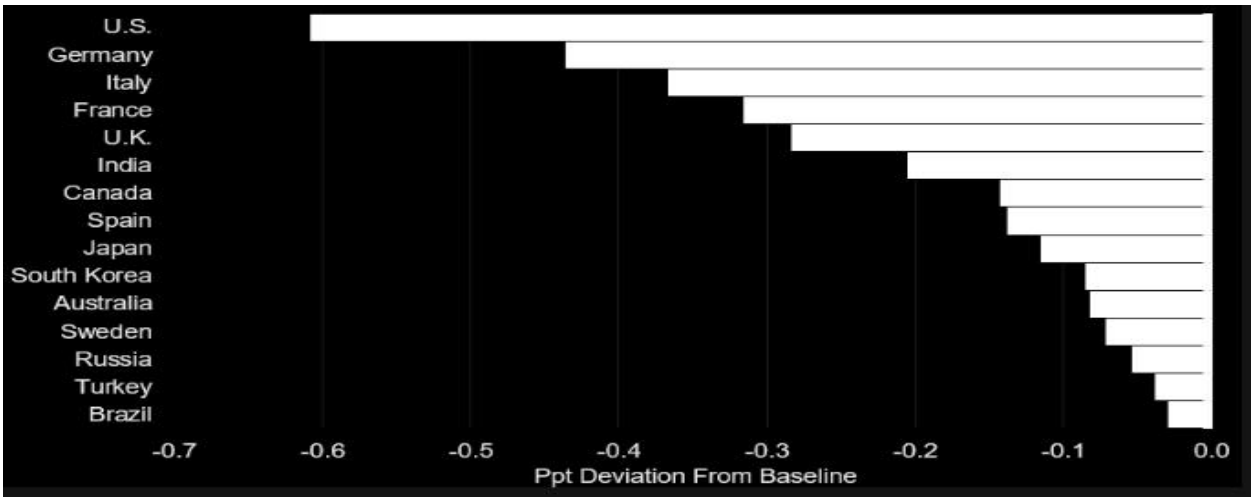
Source: OECD, Bloomberg Economics

With lockdowns set to crater demand from those countries in 2Q, and weakness expected to persist into 2H, China faces a severe blow to its exports that will drag on its recovery. China is open for business, but the world isn't buying.

We quantify the demand impact from the downturns in these economies using simulations from NiGEM. The shock from an individual country is taken as the difference between our current projection and that before the pandemic. The analysis shows that:

- The projected contraction in U.S. and Germany would have the biggest negative impact on China. Their recessions could trim China's 2020 growth by 0.6 and 0.4 ppt, respectively.
- Italy's impact is close to that of Germany, reflecting the depth of its slump.
- The downturns in the U.K., France and India will also make a sizable dent in China's growth.

Chart. Impact on GDP Growth From Demand Shock

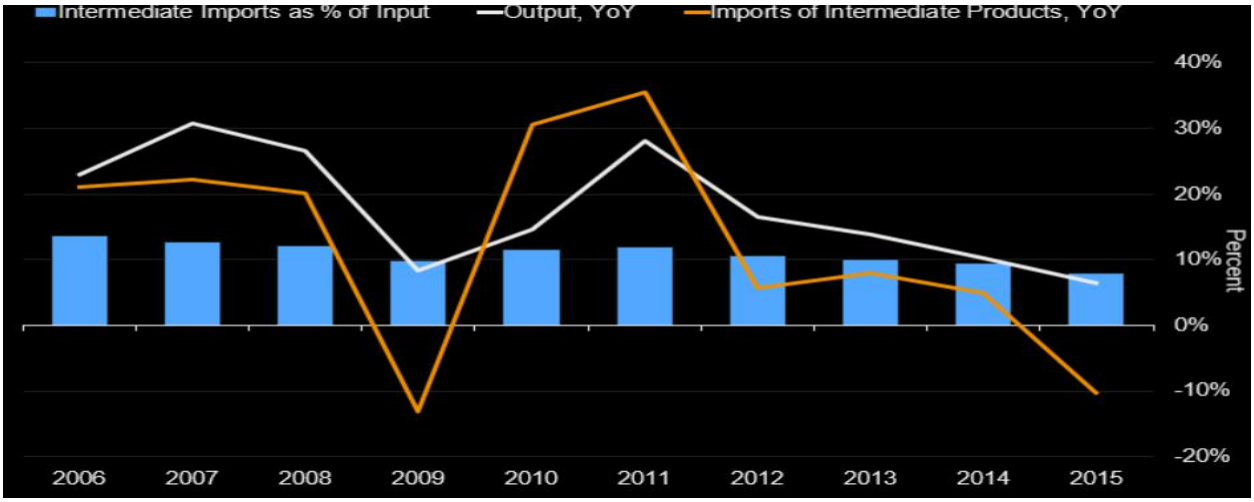


Source: Bloomberg Economics

3.2 Supply Shock to China

Similarly, China's reliance on imported inputs for production has declined over the years. Imported inputs accounted for 8% of China's total inputs in 2015, down from 14% ten years earlier, according to the latest data from the OECD.

Chart. Share of Imported Inputs in Total Inputs

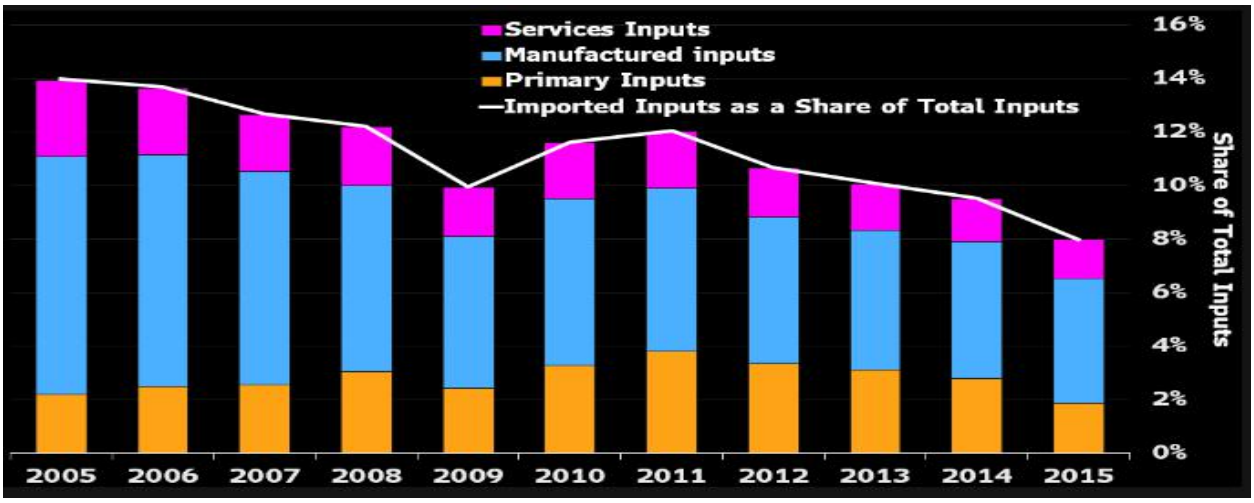


Source: OECD, Bloomberg Economics

China was most exposed to technology-based manufacturers -- South Korea, Japan and Chinese Taiwan were among the most important suppliers of inputs to Chinese businesses -- as well as the U.S. and Germany. Large exporters of primary products, such as Australia, Russia, Saudi Arabia and Brazil, also ranked high among China's suppliers.

The imported inputs were predominantly manufactured goods, accounting for 4.6% of all inputs in China's production. Imports of primary products accounted for about 2% all inputs, and imports of services (transport, storage and distribution services in particular) for about 1.5%.

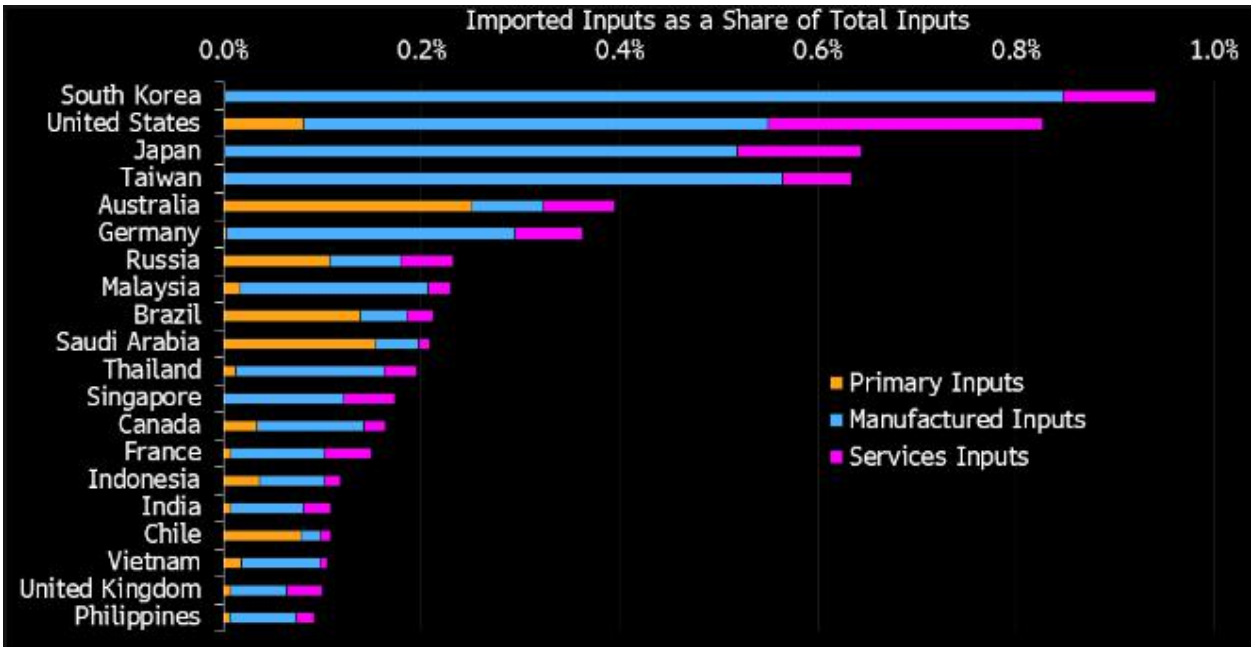
Chart. Types of Imported Inputs



Source: OECD, Bloomberg Economics

Manufactured inputs were predominantly used by Chinese factories as components and equipment. Many of these inputs are specific to each value chain, and would be difficult to source from alternative suppliers. This makes China's factories particularly at risk to the supply shock -- with some industries more heavily exposed.

Chart. Imported Inputs by Supplier Country

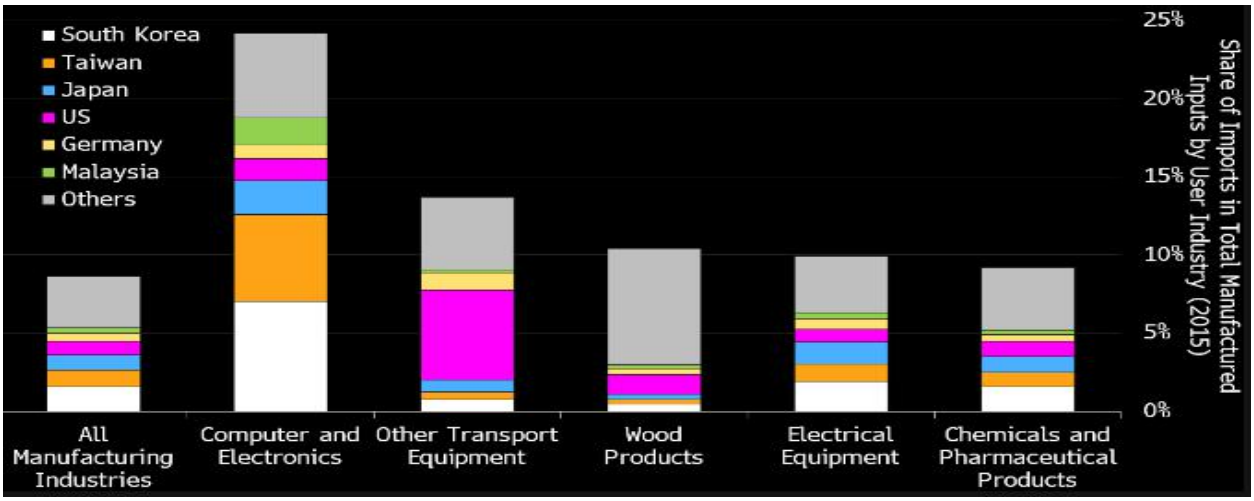


Source: OECD, Bloomberg Economics

In contrast, imports of primary products might be easier to substitute, while the provision of intermediate services might be less affected by the pandemic.

The exposure to foreign inputs is particularly large in China's computer and electronics industry -- with almost a quarter of all manufactured inputs coming from abroad, in particular 7% from South Korea and 5.5% from Chinese Taiwan in 2015. Transport equipment is the second most vulnerable, with almost 14% of inputs sourced from abroad, including 6% from the U.S. -- think of airplane engines.

Chart. Sector Exposure to Imported Inputs



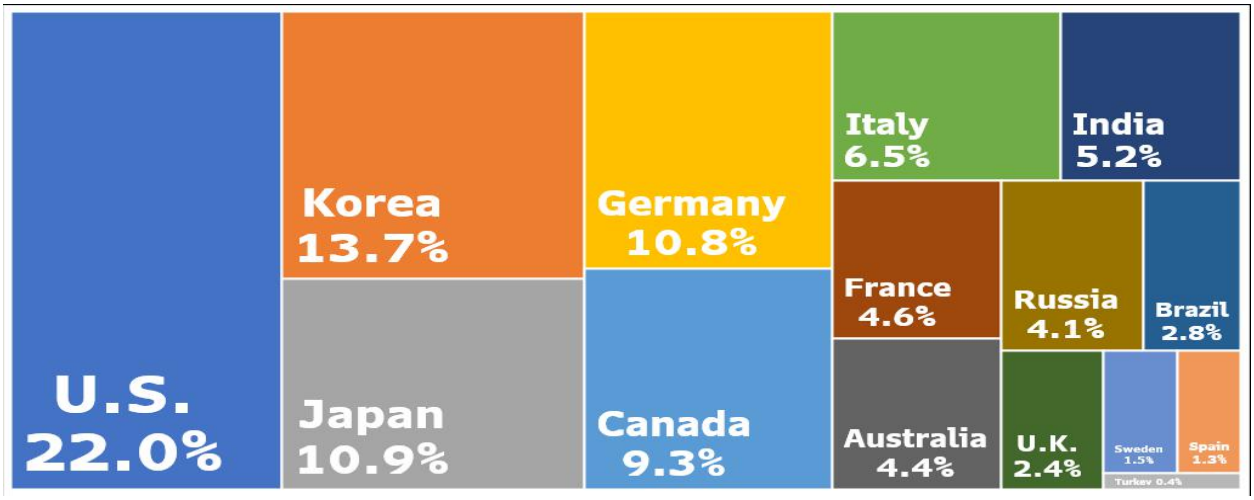
Source: OECD, Bloomberg Economics

We derive the macroeconomic impact from the supply side, using the OECD's Inter-Country Input-Output (ICIO) Tables. Exposure to each trading partner is calculated as the weighted average across Chinese manufacturing industries of each industry's maximum share of different relevant manufactured inputs imported from the trading partner.

Overall, the macroeconomic impact from supply chain disruptions is likely to be much more modest, but it will add to the demand shock and weigh on manufacturing activity.

- Some industries will see meaningful disruptions -- typically those with large and concentrated exposures to inputs from specific partners, such as manufacturers of electronics and other transport equipment.
- China is most exposed to supply shocks coming from the U.S. and South Korea, followed by Japan, Germany and Canada.

Chart. Supply Exposure by Country



Source: Bloomberg Economics

There are considerable uncertainties in assessing the supply shock impact. The extent of production disruptions will be affected by the concentration of imported inputs in the manufacturing process and their substitutability -- which are hard to gauge. With the possibility a single missing component disrupts an entire production process, the risk is that our estimates underestimate the impact of supply side disruptions.

Section 4. Two-Way Interactions

Major economies across the world have started to lift lockdowns and social distancing measures from May. This ushers in the third stage of the interaction between China and the rest of the world during the pandemic – a two-way feedback prevailing in normal economic conditions in today's integrated world.

The two-way feedback can be both positive and negative. With strong policy support, a rapid recovery in China would act as additional stimulus to other economies in addition to their domestic policies, facilitating their recovery, and vice versa.

A pessimistic scenario would be a negative feedback loop: slower-than-expected recoveries in China or the rest of the world, reflecting challenges in containing the viral outbreak or scarring to economies from the downturn, would exacerbate domestic weaknesses, further dragging down global growth.

Policy Discussions

The pandemic has brought enormous economic challenges to China – first due to the domestic outbreak and then from the severe negative spillbacks from the global recession. This requires extraordinary policies to fight the crisis and restore demand. It is also time to reflect on interconnectedness and economic structure in the context of resilience. The following aspects of policy thinking are particularly important.

Forceful Policy Action in Crisis Fighting:

Given the severe global economic hit, strong policy support is not a choice, but a necessity. In particular, fiscal stimulus is needed to do the heavy lifting in supporting the economy, with monetary and other policy areas to accompany it. Without it, households and businesses face bankruptcy, and a short, severe virus shock will turn into a longer downturn.

Policy externality in the form of international spillovers could well spillback to China, triggering negative feedback loops in the case of inadequate policy response. Strong stimulus will likely lead to a rapid rise in debt in 2020. But, a one-off stimulus – if withdrawn in a timely way – will not change the long-term debt dynamics.

More Balanced Policy Support:

Policy support needs to be balanced between targeted support for the most impacted groups and growth support, between large, state firms and small, private firms, and between investment and consumption. Public investment remains an important engine to support growth, as it was in previous downturns. But the widespread, heavy strain on households and private firms in the wake of the pandemic means that more support for the most vulnerable social groups and companies is needed.

An increase in poverty and widespread corporate failures in the absence of effective measures would prevent the recovery from transitioning from being government-driven to a self-sustaining process.

Protect Supply Chains: Over the longer term, there should be a strategic re-think and re-organization of supply chains to strike a better balance between maximizing international comparative advantages and minimizing supply chain disruption risks.